

WHISTLING RIDGE ENERGY LLC
RANDALL W. HARDY
PREFILED REBUTTAL TESTIMONY
EXHIBIT NO. 16.00r

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2009-01: WHISTLING RIDGE ENERGY LLC; WHISTLING RIDGE ENERGY PROJECT	EXHIBIT NO. 16.00r
--	--------------------

APPLICANT'S PREFILED REBUTTAL TESTIMONY
WITNESS #17: RANDALL W. HARDY

Q Please state your name and business address.

A My name is Randall W. Hardy. My place of business is located at 719 Second Avenue, Suite 1150, Seattle, Washington 98104-1728.

Q Please state your occupation.

A I am the Principal of Hardy Energy Consulting LLC, an energy consulting firm specializing in strategic advice on transmission and marketing issues for clients involved in wholesale electricity markets in the Pacific Northwest.

////

1 Q What is your current and prior experience?

2
3 A I have consulted on transmission and marketing issues, both within the Pacific
4 Northwest and throughout the Western Interconnection, since September 1998. Prior
5 to that time I was CEO and Administrator of the Bonneville Power Administration
6 (BPA) 1991 – 1997; Superintendent of Seattle City Light, 1984 – 1991; Executive
7 Director of the Pacific Northwest Utilities Conference Committee (PNUCC), 1982 –
8 1984 and Puget Sound Area Manager for BPA, 1980 – 1981. During my tenure at
9 Seattle and BPA I was a Board Member and President of the American Public Power
10 Association (APPA) and a Board Member and Chair of the Electric Power Research
11 Institute (EPRI) among other collateral positions in the electric utility industry. A
12 complete description on my professional energy experience can be found at Exhibit
13 No. 16.01r. In summary, I have over 30 years of energy and electricity experience,
14 both nationally and in the Pacific Northwest (PNW).

15 Based on my tenure as CEO of BPA and Seattle City Light, I have extensive
16 knowledge of the specifics of generation and transmission of electricity throughout
17 the PNW in general and the BPA system in particular. As a result of my consulting
18 for several major wind generators over the last 2-3 years, I have first hand knowledge
19 of the multiple wind integration challenges which BPA now faces (discussed in
20 Section IV. C.2 of Professor Michaels’ testimony) and I have, in fact, helped
21 formulate several of the potential solutions to such problems. Because of this recent
22 consulting experience, I also have a comprehensive knowledge of issues associated
23 with overall wind development throughout the PNW, as discussed in various other
24 sections of Professor Michaels’ testimony.

25
26 Q Are you able to answer questions under cross examination regarding your testimony?

1 A Yes.

2

3 Q What is the purpose of your testimony?

4

5 A I will discuss the policy and technical considerations involving the Whistling Ridge
6 Energy Project (WREP). I will specifically focus on the issues regarding WREP
7 raised in the testimony of Robert J. Michaels. In so doing, I will demonstrate how
8 WREP fulfills the mandates of Washington State's Renewable Portfolio Standard
9 (RPS), mandated by Initiative 937. I will also examine the policy considerations
10 behind establishment of the Washington, Oregon and California RPS requirements,
11 how they do and do not relate to larger West Coast electricity markets and various
12 technical issues, such as the challenges of integrating significant quantities of wind on
13 the BPA system, raised in Professor Michaels' testimony.

14

15 Q Have you reviewed the testimony of Professor Robert J. Michaels, Exhibit No. 30.00?

16

17 A Yes, I have reviewed Professor Michaels' testimony.

18

19 Q Please summarize for the Council your reading of Professor Michaels' testimony as it
20 relates to WREP.

21

22 A Professor Michaels' testimony starts with language from the EFSEC statute which
23 states that EFSEC "will balance increasing demands for energy facility location and
24 operation in conjunction with the broad interests of the public". (Exhibit No. 30.00,
25 p. 4 – underlining mine). Among these "broad interests" is a desire that the proposed
26 project will provide "abundant energy at reasonable cost" (p. 5 – underlining mine).

1 From this starting point, Professor Michaels states that there are “important
2 unanalyzed questions” about “both the likely abundance of its (WREP’s) energy and
3 the reasonableness of its cost” (p.5). His basic thesis is that “WRE is unlikely to
4 produce abundant energy at reasonable cost, both in context of northwest power
5 markets and relative to alternative sources of conventional energy...” (p. 5 –
6 underlining mine).

7 The balance of Professor Michaels’ testimony attempts to prove this thesis
8 through a detailed discussion of utility system planning and operation (Section III, pp.
9 7-9); intermittent generation resources and reliability (Section III, pp. 9- 14);
10 economics of the WRE proposal (Section IV, pp. 15-24); WRE and Western power
11 markets (Section V, pp. 25 – 29) and his Summary and Conclusions (Section VI, pp.
12 29-30).

13
14 Q How does Professor Michaels’ testimony address requirements of the Washington
15 State RPS?
16

17 A It really does not address the state RPS issue. Michaels’ testimony goes into
18 considerable detail in describing wind capacity value (or lack of it), traditional need
19 for power considerations, raw wind economics and similar issues. While it references
20 Washington, Oregon and California RPS requirements (pp. 26 – 27), it avoids
21 discussing their policy significance in driving acquisition of wind and other
22 renewable resources in those three states.
23

24 Q Why and how do these RPS requirements determine wind acquisition?
25

26 /////

1 A The need for WREP, and other Northwest wind projects, is not driven by traditional
2 need for power considerations but instead by state RPS requirements. These
3 requirements, whether created by I 937 in Washington State or legislated in Oregon
4 and California, were specifically designed to both avoid construction of new green
5 house gas (GHG) emitting resources to meet load growth and to replace existing
6 fossil fuel resources in those states with non GHG emitting renewable resources.

7 Professor Michaels' testimony essentially ignores this public policy driver
8 which led to passage of RPS laws and which has fostered the recent dramatic
9 increases in wind development. Looked at from an environmental perspective, these
10 RPS requirements are a rough way of forcing utilities to internalize the cost of GHG
11 emissions and their impact on the global environment.

12 Specifically, Michaels' claim that wind will not contribute to peak capacity
13 and is not suitable as a baseload resource (pp. 9 – 14), misses the point. Wind
14 projects like WRE will produce energy which will:

- 15 • Reduce future Pacific Northwest (PNW) energy (although not capacity) needs.

16 Because of the abundance of hydro as a baseload resource in the PNW, our
17 region in general, and BPA in particular, can usually meet its immediate (i.e.
18 minute to minute or hour to hour) capacity needs by simply drafting existing
19 hydro reservoirs more deeply. The major system constraint in the PNW tends
20 to be the need for additional energy resources - - generation which can supply
21 the required megawatt hours of electricity over weeks/months/years.

22 Therefore, since BPA's system is energy and not capacity constrained, these
23 wind resources will produce significant benefits in the long term.

- 24 • Displace older, dirtier thermal resources both in the PNW and California.

25 Indeed, this is one of the principal policy objectives behind state RPS,

26 /////

1 resulting in significant reductions both in GHGs and other environmental
2 pollutants.

3
4 Q What does Professor Michaels' testimony say about wind economics?

5
6 A Section IV of Michaels' testimony states that: "I intend to show that WRE is unlikely
7 to produce abundant energy at reasonable cost, both in the context of Northwest
8 power markets and relative to alternative sources of energy or conservation services"
9 (p.15). This section then proceeds to discuss the overall lack of need for wind power,
10 based on BPA and Northwest Power and Conservation Council (NPCC) load and
11 resource projections (pp. 15 – 19); the dramatic recent growth of wind generation
12 interconnected to BPA (pp. 19 - 20); and BPA's recent problems with wind
13 integration (pp. 21 – 24). No where does this section actually address the economics
14 of wind energy.

15 Section V of Professor Michaels' testimony (WRE and Western Power
16 Markets) talks about federal subsidies to renewables (p. 26); state RPS requirements
17 (p. 26); wind exports to California (p. 27); and non power related benefits of wind.
18 Again, nowhere in this section (or anywhere else in Professor Michaels' testimony)
19 are the actual economics of wind generation discussed.

20 In fact, the only definitive statement Michaels makes on wind economics is:
21 "Even if wind power is not an overall least cost choice, it is often the cheapest way to
22 achieve compliance with an RPS." (p. 25 – underlining mine). The latter half of this
23 statement is true and at the heart of why so many wind projects are being built in the
24 PNW. As indicated in Howard Schwartz's testimony: "According to the NWPPCC 6th
25 Power Plan, wind power is the least costly renewable energy resource that can be

26 /////

1 constructed in significant quantities, i.e. thousands of megawatts (MW) in the Pacific
2 Northwest.” (Exhibit No. 35.00, p. 4).

3 Given the policy drivers behind state RPS requirements, it should be obvious
4 that wind projects are primarily competing against each other and other renewable
5 resources (e.g. solar, biomass) as utility purchasers determine which renewable
6 projects represent the least costly way to meet their RPS. These wind projects are
7 not, as a general matter, competing against conventional generation resources (as
8 Professor Michaels’ testimony implies).

9 In addition, as Mr. Schwartz’s testimony indicates, wind is the only renewable
10 resource in the PNW that can be constructed in sufficiently large quantities to meet
11 each utility’s RPS.

12 Although wind is not currently price competitive with natural gas fired
13 combined cycle combustion turbines (CCCTs), RPS requirements mean that wind
14 only need be cost competitive against other renewable resources. The sheer volume
15 of wind being developed in the PNW, as comprehensively detailed by Professor
16 Michaels (p. 20), is ample evidence of this competitive price advantage. Hence,
17 Professor Michaels’ claim that WREP, (or wind resources in general), “is unlikely to
18 produce abundant energy at reasonable cost” (p. 5), is contradicted by his own
19 testimony.

20 While wind is not currently price competitive with natural gas fired CCCTs
21 (given today’s low natural gas prices), this relationship has not always been the case
22 in the recent past nor will it necessarily be true in the future. Indeed, Puget Sound
23 Energy (PSE) and other PNW investor owned utilities have often justified their wind
24 acquisitions in the past as being least cost resources overall - - a claim which was
25 probably accurate in the late 2007 to early/mid 2008 period. Whether future wind
26 projects will be cost competitive with CCCTs all depends on assumptions about

1 future natural gas prices. With an eventual recovery from the present recession, as
2 well as emerging environmental problems with fully exploiting new shale gas
3 discoveries, it is entirely possible that wind prices 3 – 5 years from now could be
4 quite competitive with conventional natural gas CCCTs. As has been proved time
5 after time in the U. S. electric utility industry, our ability to accurately predict the
6 future (either in a supply or demand sense) is quite limited.

7
8 Q What does Professor Michaels’ testimony say about BPA’s problems with integrating
9 wind?

10
11 A Section IV of Professor Michaels’ testimony describes the problems BPA is currently
12 having, and will continue to have in the future, in integrating large amounts of wind
13 into its Balancing Authority (BA) (pp. 21 – 24). This description of BPA’s wind
14 integration fails to mention numerous actions BPA is taking to resolve these
15 integration problems.

16 For example, Professor Michaels’ testimony refers to statements by BPA that
17 it “is already pushing the limits of wind capacity it can integrate” (p. 21). This
18 statement refers to the limits of BPA’s hydro capacity to balance the within hour
19 variations of wind projects interconnected to its transmission system. This statement
20 ignores three important considerations:

- 21 • Dispatcher Standing Order (DSO) 216. In mid-2009, BPA implemented
22 DSO 216 to ensure system reliability for integrating wind projects into the
23 grid. This mechanism allows BPA dispatchers to immediately curtail wind
24 projects when their aggregate generation threatens to exceed available
25 balancing resources, or when the combination of wind and hydro generation
26

1 might violate Endangered Species Act fish spill limits. In either case, BPA
2 has a proven procedure to curtail wind generation when required.

- 3 • BPA has just finished a three month pilot program to test augmenting its
4 hydro balancing capacity with thermal capacity from Calpine Corporation's
5 Hermiston CCCT. BPA is also considering actual longer term acquisition of
6 such CCCT capacity in its FY 2012/13 rate case. The purpose of such
7 acquisition would be to increase the amount to overall balancing capacity
8 within the BPA BA for wind integration.
- 9 • On September 1, 2010, BPA initiated a one year Customer Supplied
10 Generation Imbalance (CSGI) pilot project with Iberdrola Renewables. Under
11 this pilot, BPA will supply Iberdrola with sufficient dynamic transfer
12 capability (i.e. second to second transfer capability on BPA's transmission
13 system) to enable Iberdrola to "self supply" the bulk of real time balancing
14 capacity for its 1,000 MW wind fleet. The purpose of this program is to
15 enable Iberdrola, and eventually other wind generators, to rely on other
16 providers of balancing capacity. For example, Iberdrola is now supplying its
17 balancing reserves from its own Klamath Falls CCCT, Trans Alta's Centralia
18 generation, Grant County PUD's hydro and various market purchases. This
19 action will significantly lessen the demands on BPA's finite hydro capacity
20 available for wind integration.

21 In addition to these three actions, BPA has undertaken, or is undertaking, several
22 other measures to mitigate its emerging wind integration problems. These measures
23 include:

- 24 • Intra hour scheduling to allow BPA and other market participants to procure
25 balancing capacity in half hour (rather than the current one hour) increments.
26 By increasing the frequency with which utilities can procure within hour

1 balancing capacity, this measure will decrease the amounts of capacity which
2 must be procured at any one time. This result, in turn, will lessen the overall
3 demands on BPA's hydro balancing reserves.

4 To further illustrate the significance of this action, the Federal Energy
5 Regulatory Commission (FERC), the federal regulator for the U.S. electric
6 utility industry, issued a Notice of Proposed Rulemaking (NOPR) on
7 November 18, 2010, which, among other issues, directed transmission
8 providers to offer intra-hour transmission scheduling (for variable generators)
9 at 15-minute intervals. FERC reasoned that allowing transmission customers
10 to adjust schedules within the operating hour would enable transmission
11 providers to reduce the amount of generation and non-generation reserves
12 needed to balance wind and other variable generation resources within their
13 BAs.

- 14 • Better utilization of the Pacific Intertie. The Intertie system provides roughly
15 7900 MW of transmission transfer capacity between the PNW and California.
16 Although it is fully subscribed on a long term firm basis, it is often not fully
17 loaded in an hourly short term timeframe. This underutilization is especially
18 significant in night time light load hours (LLH), which is also typically the
19 period of highest daily generation from wind projects in the Columbia Gorge.
20 By instituting measures to better use this short term capacity, more wind in the
21 PNW can actually be delivered to purchasing California utilities, thus
22 lessening BPA's integration challenges for all wind energy facilities,
23 including those serving loads in the PNW.
- 24 • More complete displacement of PNW thermal plants during the spring high
25 hydro/high wind conditions. Providing incentives to ensure that thermal
26 plants, like the Coalstrip coal plants in Montana and the Centralia plant in

1 Washington, are displaced during these periods enables wind and spring
2 runoff hydro to serve those PNW loads directly, thus lessening the probability
3 of using DSO 216 to curtail wind and generally helping BPA to better manage
4 integration while at the same time reducing GHG.

- 5 • Dispatchable irrigation load. This is another BPA pilot program to turn on
6 and/or shift to 400 – 500 MW of irrigation load from round the clock to
7 BPA's light load hour (LLH) period (typically 10:00 pm to 6:00 am) when
8 BPA loads are at their lowest point. This additional load would then be used
9 to absorb "excess" hydro or wind generation during the spring LLH period.
10 Again, this action, if successful, would measurably assist BPA in meeting its
11 wind integration challenges.

12 Most of the above wind integration actions are described in Exhibit No. 16.02r. In
13 addition to all these measures, BPA is also investing in significant new transmission,
14 such as the John Day/McNary 500 kv line, to integrate more wind resources and
15 generally to provide BPA with greater system flexibility.

16 My main point in listing all these BPA actions relates to Professor Michaels'
17 testimony on this issue. By describing BPA's wind integration problems (pp. 21 –
18 24), but omitting any discussion of BPA's proposed solutions, Professor Michaels
19 only tells part of the story. While BPA is certainly challenged by the amount of wind
20 interconnecting to its system, the Agency is doing an admirable job of meeting these
21 challenges. The measures listed above, especially the use of DSO 216 wind
22 curtailments, will ensure that BPA continues to integrate increasing quantities of wind
23 in a manner which does not degrade system reliability.

24
25 Q What does Professor Michaels's testimony say about PNW wind exports to
26 California?

1 A The final significant issue in Professor Michaels’ testimony is his observation that,
2 according to BPA, “by the end of 2010, 47 percent of wind generation connected to
3 its system will be under contract to California utilities.” (p.27) He then opines that
4 the benefits to the PNW of such exports, relative to the delivered value of the power,
5 “are small”. (p. 28).

6 Professor Michaels’ conclusions about WREP being exported are purely
7 speculative. Whether WREP energy serves PNW or California loads will be
8 determined in the future. Even if WREP serves California loads, its energy will
9 reduce GHG, which is one of the main reasons Washington State citizens passed I
10 937 in the first place. However, it is equally likely that WREP will serve loads in the
11 PNW. This is because most PNW utilities have yet to meet their 2015 (for Oregon)
12 or 2016 (for Washington) RPS milestones. In any event, whether WREP energy
13 serves PNW or California loads will be a future determination by individual
14 purchasing utilities.

15
16 Q What conclusions does Professor Michaels make about WREP and how do those
17 conclusions align with the analysis presented in your testimony?
18

19 A Professor Michaels reaches six conclusions which he claims: “Taken together, these
20 facts lead to a conclusion that Whistling Ridge is not necessary to meet future PNW
21 power demands.” (p. 30). These conclusions have little or no bearing on the viability
22 of WREP being considered by the Council. I will address each conclusion
23 individually:

24 /////

25 /////

26 /////

1 (1) *Wind does not necessarily blow at peak load periods when its (capacity) value*
2 *would be the greatest.*

3 This conclusion misses the larger point that the value of wind is as an
4 energy resource to displace GHG emitting thermal resources in the PNW and
5 California and help utilities in those states meet their RPS requirements. Any
6 wind contribution to capacity is an incidental byproduct of this thermal energy
7 displacement purpose. Professor Michaels' point about lack of wind's
8 capacity contribution is, therefore, essentially irrelevant.

9 (2)+(3) *Balancing requirements for wind, including the likelihood of having 9000 MW*
10 *of wind interconnected by 2016, will cause major/severe problems for BPA in*
11 *the future.*

12 Professor Michaels' statements fail to describe any of the measures
13 BPA is taking to mitigate its current and future wind integration problems.
14 Many of these measures are described in Section D of my testimony. As
15 noted above, even assuming that BPA and PNW utilities do nothing to
16 integrate wind energy into the grid, FERC has made it clear that inaction is
17 not acceptable and will be penalized.

18 Of these various mitigation measures, the use of DSO 216 curtailments
19 is the most important. By enabling BPA dispatchers to curtail wind projects
20 immediately when the transmission system problems become apparent, DSO
21 216 ensures that system reliability is maintained - - regardless of the amount
22 of wind interconnected. DSO 216 also incentivizes wind energy generators to
23 take innovative approaches as described above, and will incent such
24 generators, over time, to find diverse geographic locations for wind energy
25 facilities. In addition, many of the BPA measures to facilitate the integration
26 of more wind, such as its CSGI pilot with Iberdrola, will greatly lessen the

1 need to use DSO 216 in the near/mid term. This, in turn, will provide some
2 time for longer term integration strategies to be implemented (e.g. more
3 Intertie transmission to California to deliver PNW wind to California loads or
4 to British Columbia to enable PNW wind to be stored in BC Hydro
5 reservoirs).

- 6 (4) *The NPCC Sixth Power Plan shows that additional wind resources are not*
7 *needed until 2030.*

8 Again, while this comment may or may not be true, it is a non
9 sequitor. The need for wind is primarily driven by state RPS requirements,
10 not by traditional need for power considerations. As explained in Section B of
11 my testimony, the policy drivers for wind/renewable resource development
12 are state RPS requirements which were passed into law to reduce GHG
13 emissions from any potential new and existing thermal plants. Wind energy,
14 including that from WREP, will displace GHG emitting energy from coal and
15 other thermal plants, both in the PNW and California. This policy imperative
16 is what led to the passage of state RPS and is the principal reason why so
17 much wind is currently being developed in the PNW.

- 18 (5) *Fifty percent of PNW wind goes to California, thus providing few economic*
19 *benefits to Washington State.*

20 Professor Michaels' statements regarding California exports have
21 limited relevance to WREP. WREP is just as likely to be purchased by a
22 PNW utility as by a California entity. Even if it is purchased by a California
23 utility, the GHG reduction benefits still are realized, which was one of the
24 main reasons for Washington State voters passing I 937 in the first place.

25 /////

26 /////

1 (6) *Because of its intermittency, wind is of “little or no value” is serving utility*
2 *peak loads or fur use as a baseload resource.*

3 This conclusion is basically a restatement of Conclusion # (1). Most
4 utility experts agree that wind has little or no value as a peaking or baseload
5 resource. Its value is in providing GHG – free energy which will displace
6 new and existing coal/thermal plants. Professor Michaels’ repeated emphasis
7 of this point is simply not relevant to the genuine value the wind provides,
8 both to the PNW and to other regions. His point also shows that his focus
9 incorrectly assumes that BPA is or operates as a single utility – far from the
10 role BPA serves in the Western energy grid.

11 In summary, virtually all the issues regarding WREP raised in Professor Michaels’
12 testimony are either: (1) of little or no relevance to the actual value of WREP; (2) tell
13 only part of the story; and/or (3) essentially ignore state RPS requirements which are
14 the principal drivers of wind development in the PNW.

15
16
17
18
19
20
21
22
23
24
25
26